

FIG. 1A

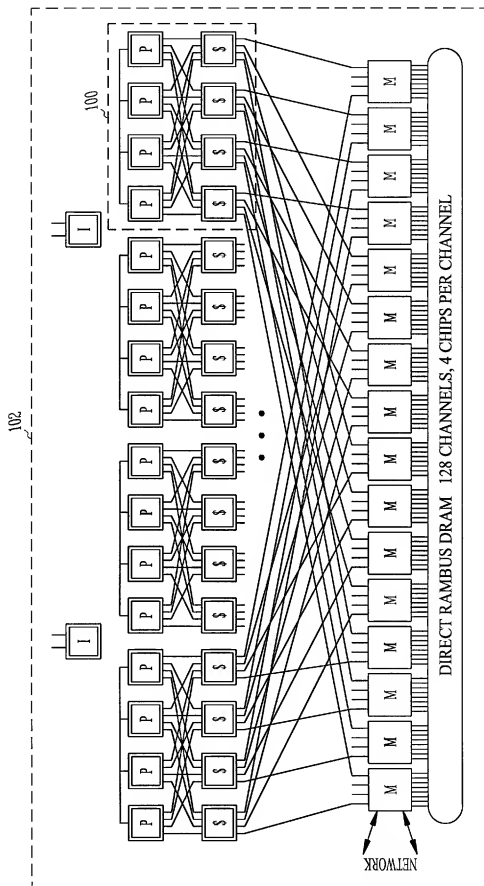
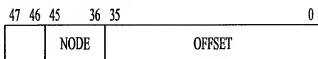


FIG. 1B

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PHYSICAL ADDRESS FORMAT



PHYSICAL ADDRESS SPACE

FIG. 2A

PHYSICAL ADDRESS MAP

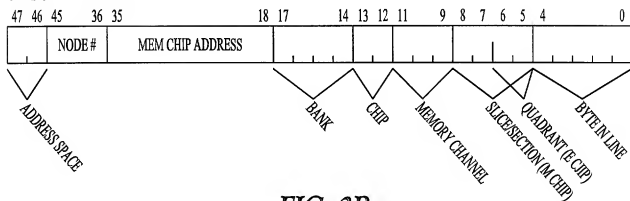


FIG. 2B

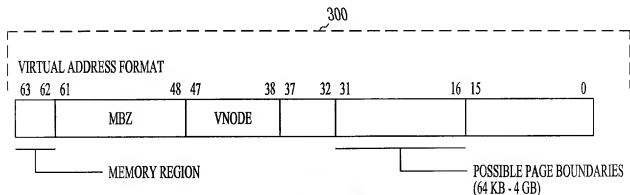


FIG. 3

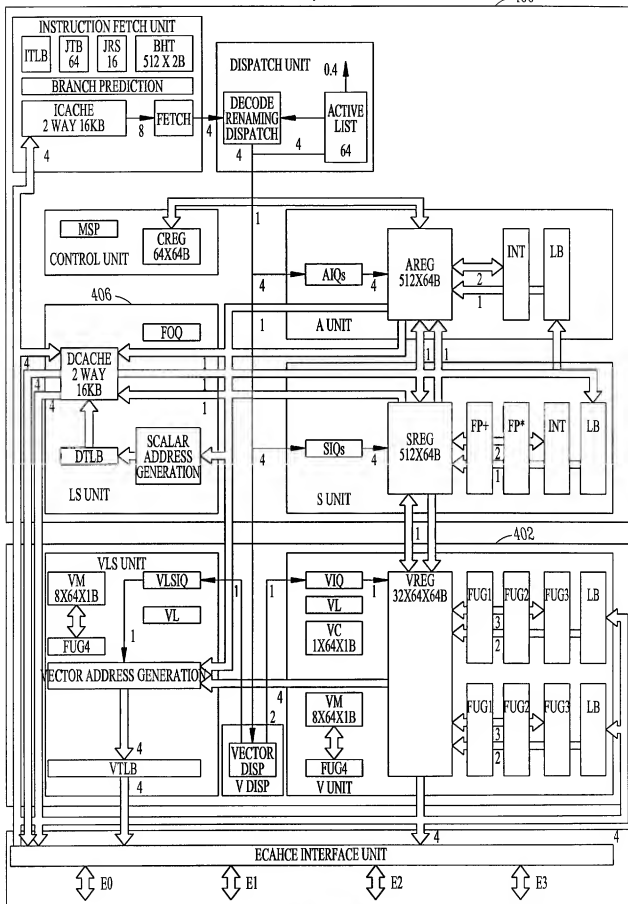


FIG. 4A

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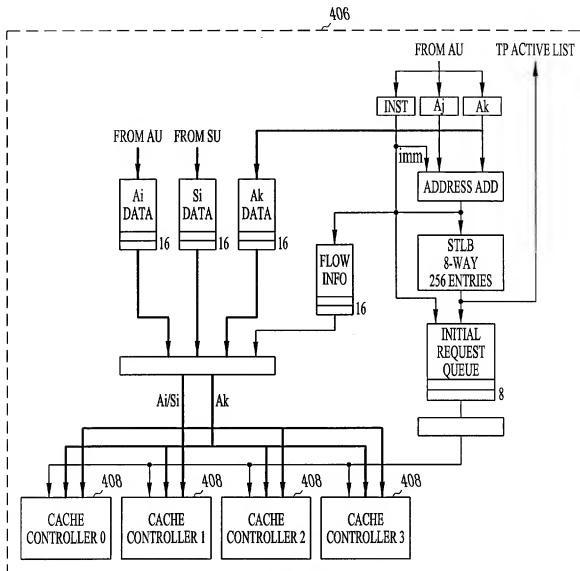


FIG. 4B

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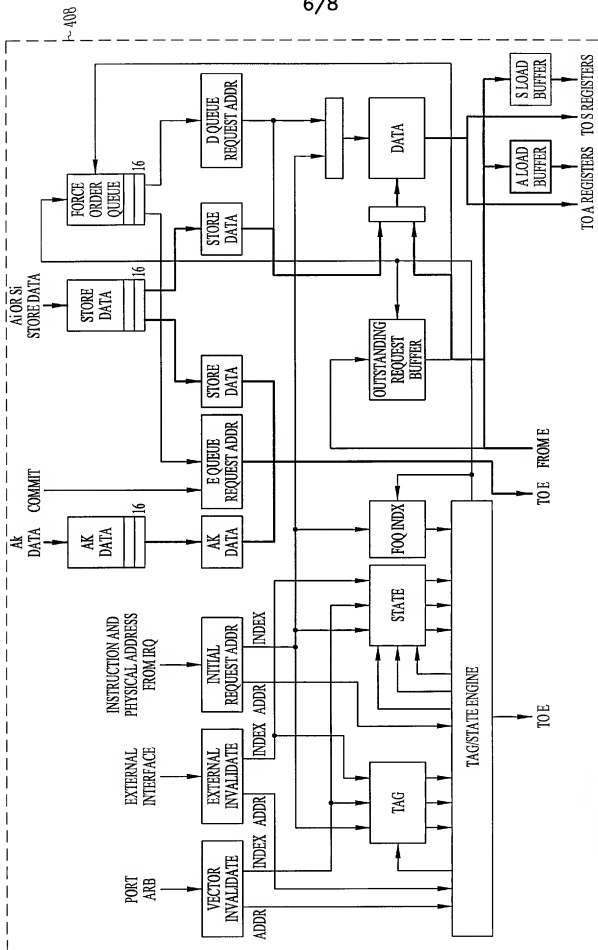


FIG. 4C

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DCACHE BYPASS	INITIAL REQUEST	TAG & STATE	FOQ INDEX MATCH	ACTION									
				MSG TO E	D\$	FOQ ENTRY	E	D	P	ALLOCATE	ORB ENTRY	OTHER	
NO	Read	MISS	NO	Read		Dummy		X	X	LRU Way	Read		
			YES			ReadUC	X				Read nc†		
		HIT	NO		Read								
			YES ‡			Read		X					
	ReadShared	MISS	NO	ReadShared		Dummy		X	X	LRU Way	Read		
			YES			ReadUC-Shared	X				Read nc		
		HIT	NO		Read								
			YES ++			Read		X					
	ReadNA	MISS	NO	ReadNA							Read		
			YES			ReadNA	X				Read nc		
		HIT	NO		Read								
			YES			Read		X					
	Write	MISS	NO	ReadMod		SWrite	X	X	X	LRU Way	Read		
			YES			SWrite	X						
		HIT	NO			SWrite	X	X					
			YES			SWrite	X	X					
	WriteNA	MISS	NO			SWriteNA	X						
			YES			SWriteNA	X						
		HIT	NO			SWrite	X	X					
			YES			SWrite	X	X					
	Prefetch (to discard)	MISS	NO										
			YES										
		HIT	NO										
			YES									Discard	

FIG. 4D

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DCACHE BYPASS	INITIAL REQUEST	TAG & STATE	FOQ INDEX MATCH	ACTION															
				MSG TO E	D\$	FOQ ENTRY	E	D	P	ALLOCATE	ORB ENTRY	OTHER							
YES	Read	MISS	NO			ReadUC	X				Read nc								
			YES																
		HIT	NO											ReadUC-Shared	X			Read nc	
			YES																
	ReadShared	MISS	NO		ReadUC-Shared	X			Read nc										
			YES								Invalidate								
		HIT	NO										ReadNA	X			Read nc		
			YES																
	ReadNA	MISS	NO		ReadNA	X			Read nc										
			YES								Invalidate								
		HIT	NO										SWrite	X					
			YES																
	Write	MISS	NO		SWrite	X													
			YES								X								
		HIT	NO										SWriteNA	X					
			YES								X								
	WriteNA	MISS	NO		SWriteNA	X													
			YES								X								
		HIT	NO															Discard	
			YES																
	Prefetch (to discard)	MISS	NO																
			YES																
		HIT	NO																
			YES																
	IORead					ReadNA to IO space	X				Read nc								
	IOWrite					SWriteNA to IO space	X												
	afadd ‡‡					afadd (1 dw)	X				Read nc								
	afax					afax (2 dw)	X				Read nc								
	acswap					acswap (2 dw)	X				Read nc								
	aadd					aadd (1 dw)	X												
	aax					aax (2 dw)	X												
	Lsync s v					Lsync s v	X												
	Lsync_v s					Lsync_v s	X					Hold IRQ							
	Msync					Msync	X					Bypass Mode On							
	Msync P Msync V					Msync	X												
	Gsync					Gsync	X												

† A "Read nc" ORB entry specifies that the returning data will not be cached. Both ReadNA and ReadUC requests use "Read nc" ORB entries.

(A ReadNA tells the Ecache not to allocate the line. A ReadUC tells the Ecache that the P CHIP will not be caching the line but the Ecache still should.)

‡ Do more sophisticated match here (require pending or word match) ‡‡ Do more sophisticated match here (require pending or word match)

‡‡‡ These five packet types are AMOs. The FOQ column indicates how many dwords of adat accompany the request.

Three of the AMOs return data, and two do not.

FIG. 4E